

# Supporting Information

## Electronic and morphological dual modulation of NiO by indium-doping for highly improved xylene sensing

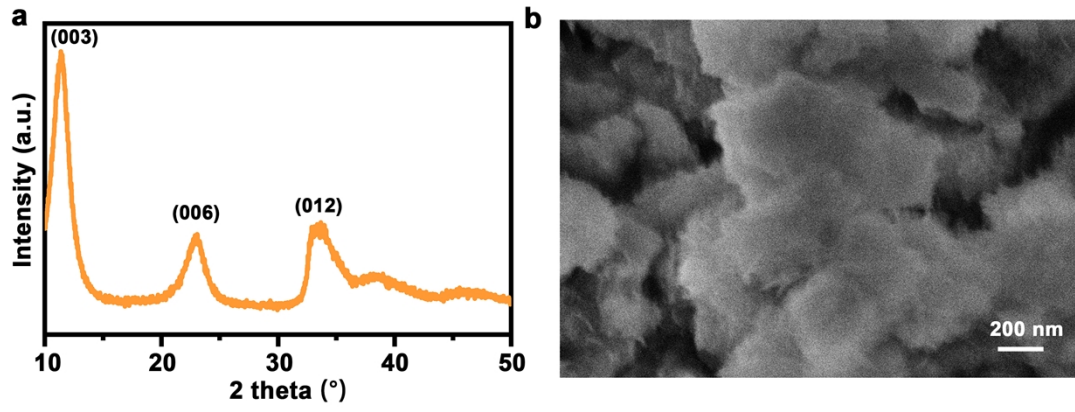
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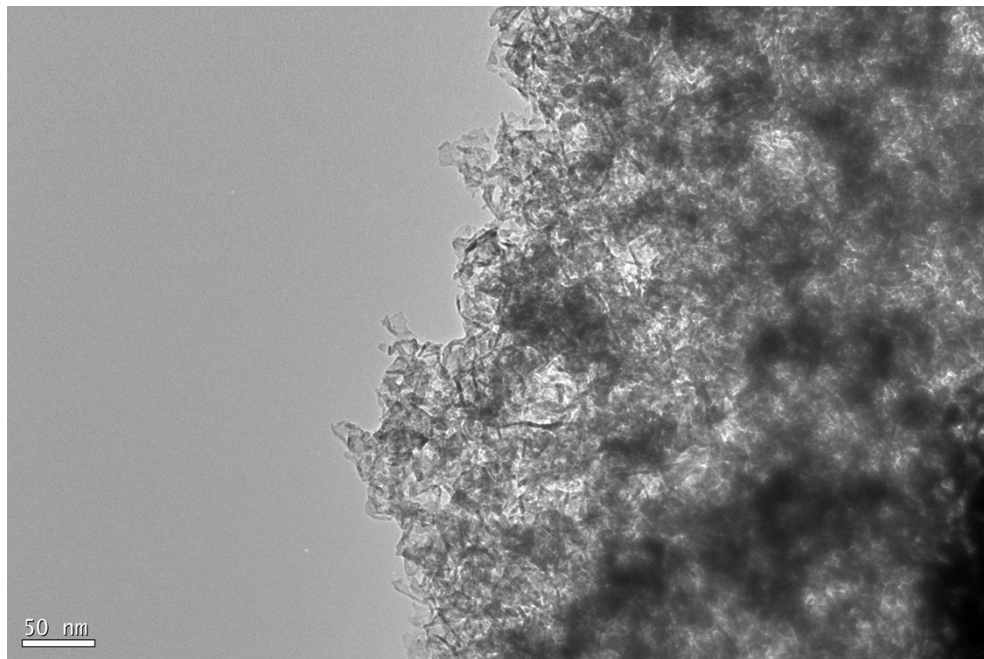
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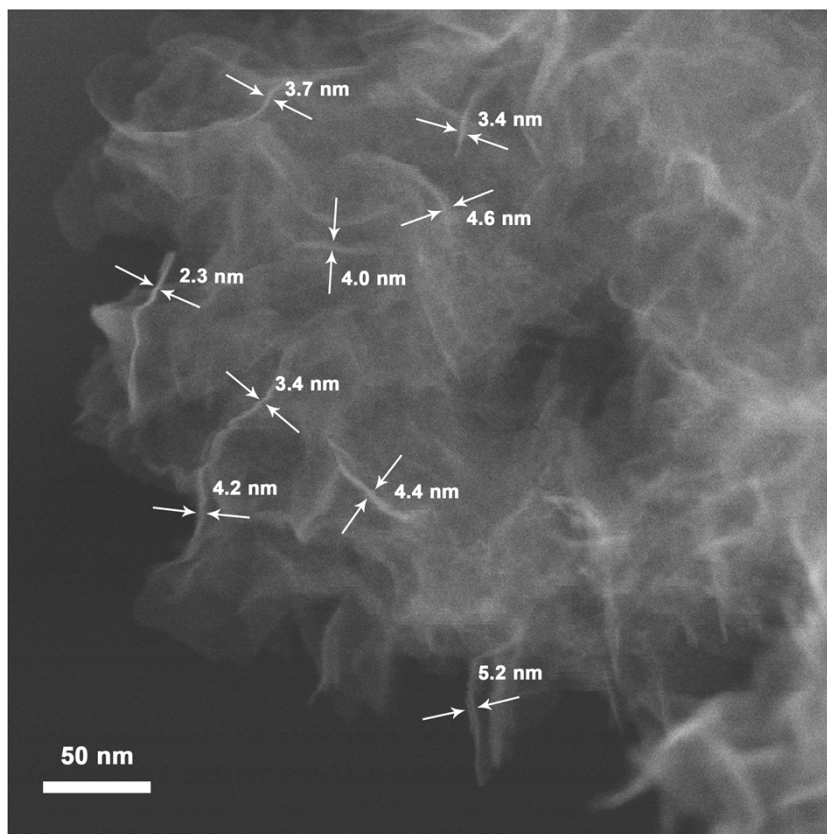
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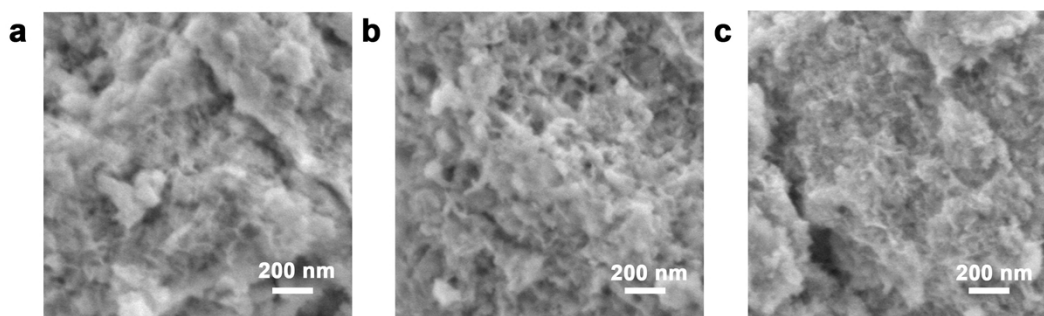
**Figure S1** (a) XRD pattern and (b) SEM image of NiIn-LDH precursor of INO-III.



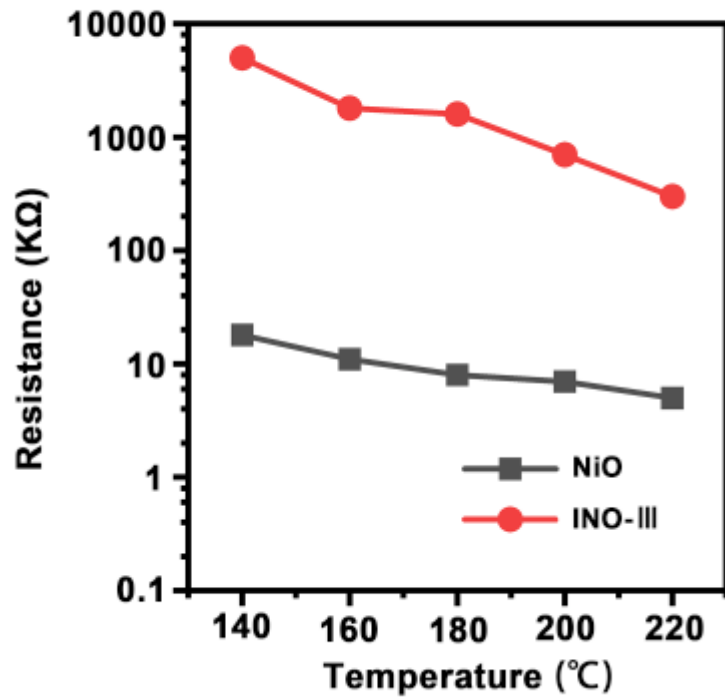
**Figure S2** TEM image of INO-III.



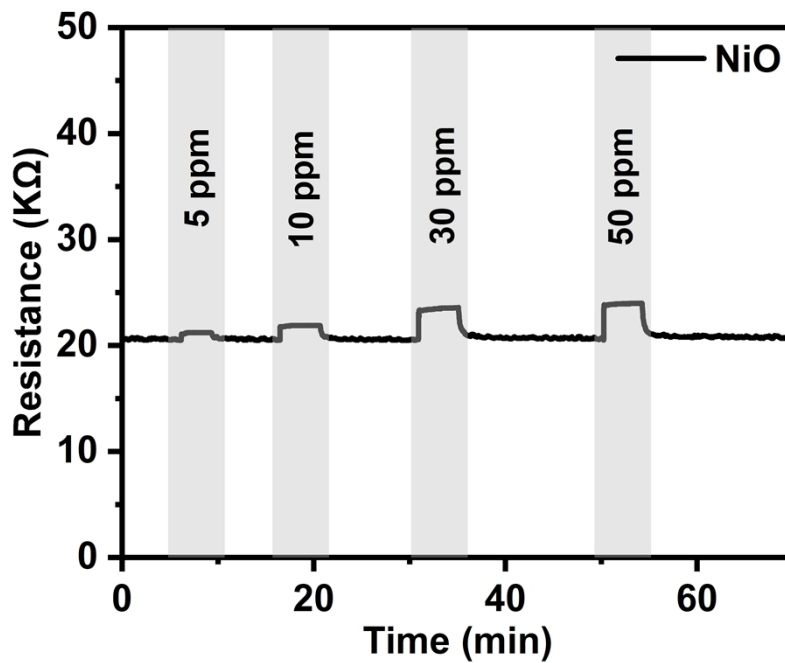
**Figure S3** Scanning TEM image of INO-III, which show that the material is composed of ultrathin nanosheets with a 2-5 nm thickness.



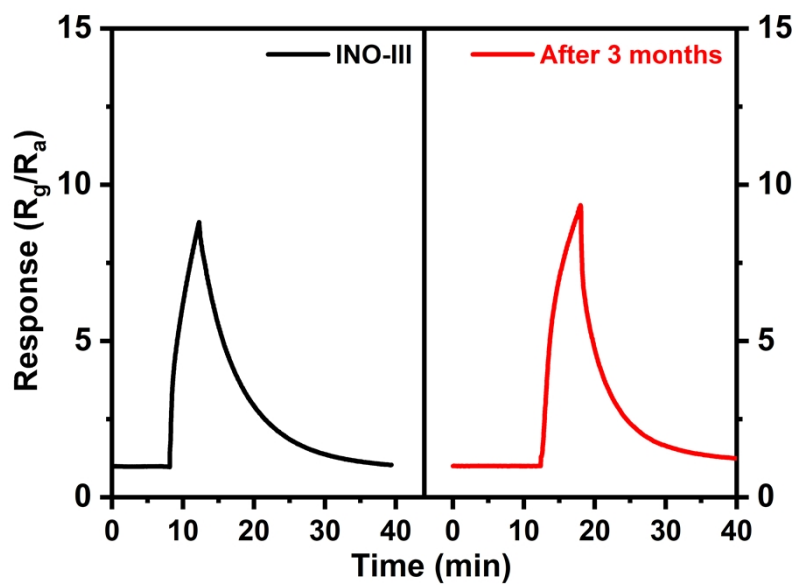
**Figure S4** SEM images of (a) INO-I, (b) INO-II and (c) INO-IV, respectively.



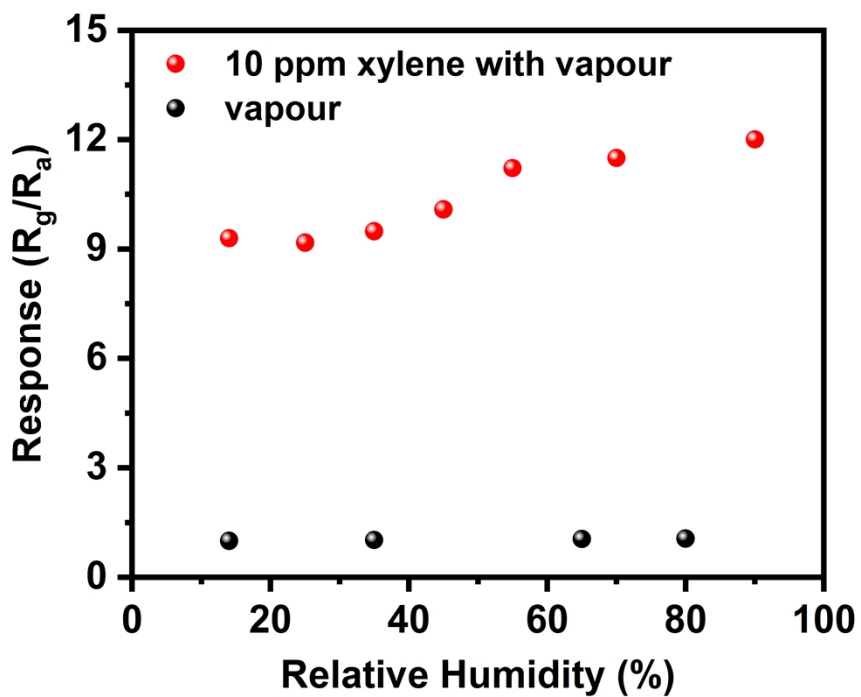
**Figure S5** Base resistances in air of the sensors based on NiO and INO-III at different operating temperatures.



**Figure S6** Dynamic sensing transients of pristine NiO-based sensor toward xylene in the concentration range of 5-50 ppm at 160 °C.



**Figure S7** Response-recovery curves of INO-III-based sensor to 10 ppm of xylene at 160 °C before and after three months.



**Figure S8** The response vs humidity to 10 ppm of xylene at 160 °C of INO-III based sensor.